

[PATENT CLAIMS]

Claim 1. A rolling guide apparatus including a track rail with projected portions projecting to the left and right, and a movable block having at least four sets of endlessly circulating rolling member rows built therein which are in rolling contact with upper and lower surfaces of said left and right projected portions of said track rail,

characterized in that said track rail has an elastically deformable flexible structure comprising; a thin central plate portion being elastically deformable to the left or right; said thin projected portions projecting to the left and right from an upper end portion of said central plate portion and being flexibly deformable in a vertical direction; and fixed plate portions projecting to the left and right from a lower end portion of said central plate portion.

Claim 2. The rolling guide apparatus as set forth in claim 1, wherein said track rail is formed by welding together back sides of bottom plate portions of a pair of rail members each having a channel-shaped cross sectional configuration.

Claim 3. The rolling guide apparatus set forth in claim 1, wherein said track rail is formed into an integral structure by drawing.

Claim 4. The rolling guide apparatus as set forth in claim 1, wherein said track rail comprises a cover plate molded from precision sheet steel into a circular arc shape and a base member welded by electrodeposition to said cover plate; said thin left and right projected portions being flexibly deformable in a vertical direction are formed by said cover plate, and said central plate portion and said fixed plate portions are formed by said base member.

Claim 5. A rolling guide apparatus characterized in that rolling guide apparatuses as set forth in any one of claims 1 through 4 are arranged in a vertically opposite relation with respect to each other with their respective track rails being disposed orthogonal to each other, and two movable blocks are coupled with each other in back-to-back contact to form an integral structure so as to be movable in two axial directions.

Claim 6. The rolling guide apparatus as set forth in any one of claims 1

through 5, wherein said track rail comprises a rectilinear rail.

Claim 7. The rolling guide apparatus as set forth in any one of claims 1 through 5, wherein said track rail comprises a curvilinear rail curving in a vertical direction.

Claim 8. The rolling guide apparatus as set forth in any one of claims 1 through 7, wherein all said rolling members of said four sets of endlessly circulating rolling member rows comprise balls alone.

Claim 9. The rolling guide apparatus as set forth in any one of claims 1 through 7, wherein two left and right rows of endlessly circulating rolling members located at an upper side of said projected portions comprise rollers having their rolling face portions of a circular arc configuration, and said rolling members located at a lower side of said projected portions comprise balls.

Claim 10. The rolling guide apparatus as set forth in claims 5, wherein said upper and lower track rails are fixedly secured to centers of mounting plates, respectively, with end portions of said mounting plates being fixedly attached to counterpart mounting surfaces.